

ABSTRACT OF THE DISCLOSURE

An improved process for fabricating emitter structures from nanowires, wherein the nanowires are coated with a magnetic material to allow useful alignment of the wires in the emitter array, and techniques are utilized to provide desirable protrusion of the aligned nanowires in the final structure.

- 5 In one embodiment, nanowires at least partially coated by a magnetic material are provided, the nanowires having an average length of about 0.1 μm to about 10,000 μm . The nanowires are mixed in a liquid medium, and a magnetic field is applied to align the nanowires. The liquid medium is provided with a precursor material capable of consolidation into a solid
- 10 matrix, e.g., conductive particles or a metal salt, the matrix securing the nanowires in an aligned orientation. A portion of the aligned nanowires are exposed, e.g., by etching a surface portion of the matrix material, to provide desirable nanowire tip protrusion.

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